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# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •

JULY 25, 1936

## What Is Wrong?

See Page 52

A SCIENCE SERVICE PUBLICATION

# SCIENCE NEWS LETTER

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The Weekly Summary of

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*Edited by* WATSON DAVIS

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# DO YOU KNOW?

It takes fifty years for the scented heartwood of the sandalwood tree to reach marketable size.

A list of 238 terms used in the argot of the underworld narcotic addict is reported in "American Speech."

Investigations have shown that water content as well as age of the snow deposit is important in producing avalanches.

The Negro race has been in Africa at least 5,000 years, judging by pictures from Egypt showing captives with hair of woolly type.

Twenty-seven states were represented in the second national goat's milk contest recently; and a New York State dairy won first honors.

A mother bear weighs about 200 times as much as her new-born cub, whereas a human mother weighs only about 20 times as much as her child.

A Virginia farm that is completely electrified, from an electric hay hoist to electric wood choppers, will be exhibited to the World Power Conference in Washington in September.

In 1935 about 15,000 Indians were vaccinated against smallpox, and this disease which once killed Indians wholesale is becoming rare among United States Indians.

The conditions that favor long life in microscopic parasites are often just the opposite of conditions that favor their rapid growth and activity as disease producers.

Hogs wallow in the mud, says a professor of agriculture, because hogs have fewer sweat glands than other farm animals and therefore like to dampen their bodies for coolness.

Writing of the marvelous sheep he saw in Arabia, the ancient historian Herodotus said that one kind had tails so long "that men attach them to a little trolley, to prevent them from trailing along the ground and so contracting sores."

Canadians have discovered that planting carragana hedges will double the wheat yield from a 500 foot strip along the hedge, because the hedge causes snow to deposit on both sides of it, rather than collect in gullies and run off in the spring.

## WITH THE SCIENCES THIS WEEK

*Most articles are based on communications to Science Service or papers before meetings, but where published sources are used they are referred to in the article.*

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ETHNOLOGY

# "Handies" Turn Limelight On Man's Oldest Language

## Teacher of the Deaf Says Sign Language Stimulates Imagination; He Deplores Puns in Any Language

"IT IS the oldest language in the world."

In this brief verdict, science sums up the current vogue for making "handies," which has the younger generation tying its fingers into knots this summer, in the effort to express itself in gestures.

At the Columbia Institution for the Deaf, where sign language is no novelty in school time, Dr. Percival Hall, the president, looked out over the deserted green lawn of the campus, and expressed the opinion that handies have educational value.

"Thinking up signs, and interpreting the signs made by others, may stimulate imagination," Dr. Hall believes.

"But," he added, "puns are terrible—just as bad in signs as in speech."

### Thumbs Down

With that verdict, which he might have given by signing thumbs-down in the good old Roman fashion, Dr. Hall expressed a language specialist's objection to those handies made by piecing together syllables in tricky ways to build up a word.

As an example of sign-punning, there is the word "hardship." Some handy-manufacturer has concocted this word by a pounding gesture for hard and a waving motion of the hand to suggest a ship at sea.

"That sort of thing may be humorous," declared Dr. Hall, "but such signs are useless because they are not natural signs. Natural sign language can be understood the world over. It does not depend on double meanings of words, or on any language.

"We have had experience with deaf persons who visited a foreign country and, with no knowledge of the language, managed to get along by conversing in signs with people of the country."

### The Natural Way

Just to show a natural way of signaling hardship, Dr. Hall then demonstrated by working one hand with difficulty inside the other. The motion suggested a struggle, and the idea could be made still more graphic, he pointed out, by facial expression and motion of the body. Aside from Indians, most persons who become skilled at this art of pantomime employ gestures of face, hands, and body to make themselves clear. Indians are noted for keeping straight faces when they talk with their hands, but then, Indians used this device often when dealing with unknown or enemy tribes.

Dr. Hall agrees with Sir Richard Paget, British investigator of origins of speech, in believing that sign language was man's first venture in communicating with his fellows.

Thousands of years ago, in the Stone Age, it is supposed that cave dwellers communicated by signs. Tongue-gesturing often accompanied the effort of arm waving, and grunts were made in the struggle. In time, certain grunts came to be recognized without seeing the gestures, and speech slowly evolved.

At the Columbia Institution for the Deaf, a government-aided school at Washington, Dr. Hall has sign language taught to one class—the sophomores.

"Our students pick up sign language in their games and social activities, whether we teach it or not," he explained. "So, we instruct one class, just in order that they may understand the basic principles and learn to make the signs properly."

### Not Sign Alphabet

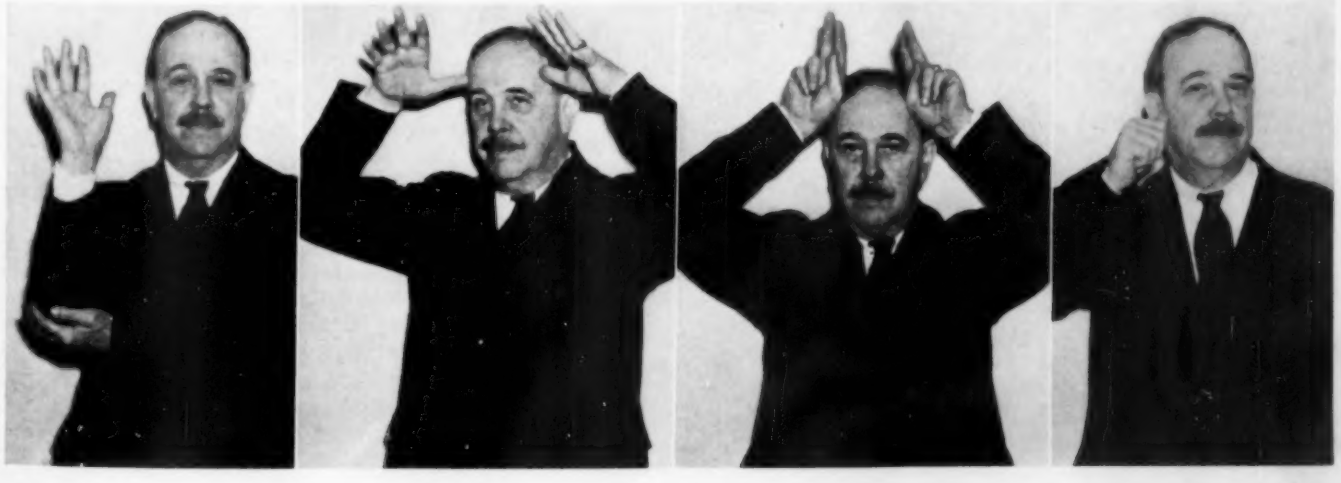
But don't confuse the sign language with the sign alphabet that deaf persons sometimes use in talking together, Dr. Hall warns.

The sign alphabet is a set code by which words can be rapidly spelled out in finger positions. Only those who have mastered the alphabet can understand it.

Sign language has adopted some conventionalized gestures, and what might be called local dialect signs, that would be as hard for the beginner to grasp as

*TRY THESE*

***Can you guess these "handies"? They are natural sign language words, as demonstrated by Dr. Percival Hall. Left, Dr. Hall gives the sign for tree. Next, this is an easy one—yes, "deer." Next, another animal, "horse." Right, you may never guess it, it means "girl," a gesture indicating a bonnet string.***



the finger alphabet. The sign language gesture for "girl," for instance, is widely made by indicating a bonnet string—a relic of days when girls wore sunbonnets.

But, in general, Dr. Hall declares, good sign language is natural and universal, and the pantomime artist who masters use of his hands and body can make himself understood wherever he goes.

*Science News Letter, July 25, 1936*

PUBLIC HEALTH

# Highest Heat Death Rates In Arizona and Nevada

## Because of Sparse Population, Total Numbers Do Not Bulk so Large; South Atlantic Relatively Fortunate

THE death tolls that the heat has taken in recent days in Michigan and elsewhere in the high temperature area are unusual when the records of past years are viewed.

At the request of Science Service, statisticians of the Metropolitan Life Insurance Company reviewed the latest available complete U. S. statistics and found that much the highest death rates from excessive heat are recorded in Arizona and Nevada.

Because of relatively sparse populations, the total number of deaths do not bulk as impressively from these states as they did during the Michigan heat wave. Aside from these two mountain division states, highest death rates occur in three states in the north central region, Wisconsin, Illinois, and Iowa. South Atlantic and east south central states, as a whole, record death rates from excessive heat only two-thirds of the average for the whole country, and about one-third as high as the states in the east north central and west north central divisions.

Relatively low death rates from heat which prevail in the south Atlantic, east south central, and west south central divisions are the more remarkable because of concentration in these areas of four-fifths of the Negro population of the United States, and because of the fact that Negroes show death rates from excessive heat from two to over six times as high as corresponding rates for whites in same areas.

Except Pennsylvania and California, where the death rate from heat and sunstroke closely approximates the average for the United States, every state in New England, Middle Atlantic and Pacific Coast regions falls far below the average for the United States.

The ages most seriously struck are babies under one and persons past fifty. Infants should be carefully protected from exposure during hot weather. Their diet and clothing should be carefully regulated. Older persons should avoid unnecessary exposure to high temperatures, overcrowding and overactivity.

Cities, as a general rule, have higher mortality rates from heat and sunstroke than rural districts, particularly in years when above-average number of deaths occur from heat throughout the United States.

There are wide fluctuations in number of deaths due to excessive heat from year to year. In some years, as this year, when the summer season has frequent and successive days of high temperature, number of deaths is strikingly large.

States abutting on one another frequently show wide differences in death rates from heat and sunstroke. For example, although Arizona and Nevada have highest mortality rates in the United States from excessive heat, some of the states adjoining them register the very lowest rates in the entire country.

Striking examples are Arizona, where average death rate for three year period, 1931 to 1933, was 9.7 per 100,000 population, whereas three adjoining states, New Mexico, Utah and Colorado recorded rates of only 0.1, 0.6, and 0.1 respectively. Similarly, Nevada recorded 8.6, whereas the figure for California was 1.3, for Oregon 0.1, and for Idaho, 0.3.

*Science News Letter, July 25, 1936*

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It is believed that the early Chinese, like the Greeks, painted their statues.

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Cutworms eat at night, and therefore farmers who lure them with poison bait make it fresher and more attractive by applying it in the evening.

METEOROLOGY

## Ball Lightning Observed By Nebraska Family

A DOUBLE display of ball lightning, a very rare phenomenon, was witnessed recently by Mrs. P. H. Moore of Lincoln, Nebraska. She was watching a rainstorm through a window of her home, when she saw three red globes of fire rolling and bouncing along the street. They struck an iron post and disappeared.

Mrs. Moore called her husband to the window, but he did not arrive in time to see the first display. The Moores, however, together witnessed a second discharge of three or four balls about a quarter of a minute later. This second set was also seen by two boys, Don and Dale Darnell.

Prof. J. C. Jensen of Nebraska Wesleyan University has interviewed both the Moores and the Darnell boys, and is convinced of the essential accuracy of their observations.

*Science News Letter, July 25, 1936*

BOTANY

## Flower Photo a "Fooler" To Trap Unwary Botanists

**See Front Cover**

WHAT is wrong with the flower picture on the cover of this issue of the SCIENCE NEWS LETTER?

Take another look before you give an answer. (Only ambitious young botanists will be held responsible.)

Correct: the lotus flower and the arrowleaf foliage do not belong to each other. It is an Esau-and-Jacob picture—the flower is the flower of *Nelumbo*, but the leaves are the leaves of *Sagittaria*.

Another point on which local worthies sometimes fool the innocent—and in all innocence on their own part, too—is the claim you will often hear, in many places where the American lotus grows, that "This plant is found only here and in Egypt."

Actually, this declaration gives America too little credit, and Egypt too much. The American lotus has a wide distribution in the central part of this country; and the famed lotus of the Nile was not a lotus at all but a white waterlily. The Old-World lotus, a close cousin of the American species, is native to southern Asia. Buddha is quite properly associated with the lotus blossom, but not Osiris.

*Science News Letter, July 25, 1936*

PUBLIC HEALTH

# Do Not Expect National Infantile Paralysis Outbreak

## Federal H-Men Have Gone to Field to Study the Tennessee-Alabama Outbreak and to Try New Nose Spray

NO INDICATIONS are seen by U. S. Public Health Service officials that the infantile paralysis (poliomyelitis) epidemic in Alabama and Tennessee will reach national proportions. Reports from other parts of the country show no unusual amount of the disease.

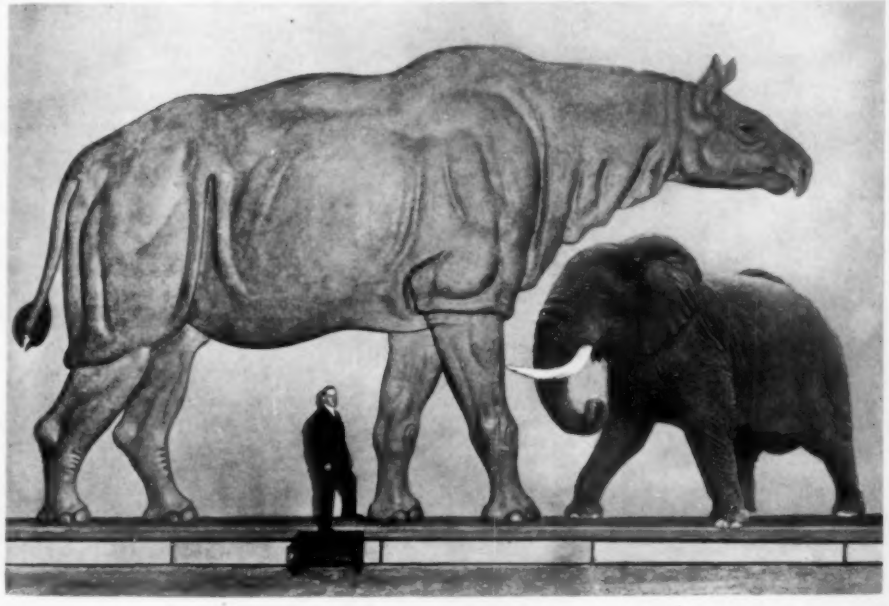
Federal health authorities are also encouraged by the fact that the Alabama-Tennessee outbreak is not so severe as the North Carolina epidemic of about the same time last year. Nor does it show any great tendency to spread.

Federal "H-men" led by Dr. Charles Armstrong have gone into the affected areas in order to aid in the application of the new nose spray which it is hoped will prevent the disease. Developed by Dr. Armstrong and Dr. W. T. Harrison as the result of experimental work on monkeys, the alum-picric acid nasal spray is receiving its first large-scale application in this epidemic.

In the hope of saving some of those who might otherwise fall victims, the nasal spray is being used without any attempt at making a controlled experiment. Physicians and health officers are administering the spray, which is quite harmless, to those who desire it and who can be treated with the facilities available. Undoubtedly a study will be made later to determine whether any cases of poliomyelitis occur among those who are treated with the spray, but there is no systematic exclusion of some from the treatment in order to have a "normal" group in which the disease might have an unhampered chance to spread, as would be the case if the doctors were conducting a laboratory experiment.

In last year's North Carolina epidemic there was experimental use of vaccines designed to provide artificial immunity to the disease. In the time subsequent to that use medical opinion has developed which has indicated that vaccines should not be used.

*Science News Letter, July 25, 1936*



*WORLD'S LARGEST*

***Baluchitherium, the biggest mammal that ever walked the earth, has a new full-size portrait statue in the American Museum of Natural History, in New York City. John W. Hope, museum staff artist who made the image, stands under his handiwork to give an idea of the extinct monster's tremendous size. It was half again as high as the largest living mammal, the African elephant, and it had a body about twice as bulky as the elephant's. Baluchitherium (the name is Greek for "Beast of Baluchistan") was a 10-ton, 30-foot-long relative of the rhinoceros, that lived in Central Asia 25,000,000 years ago. (See SNL, June 8, 1935, for article on Titan Beasts.)***

MEDICINE

## Nasal Spray as Preventive Of Infantile Paralysis

BECAUSE spraying the nose with an alum-picric acid solution has proved effective in preventing poliomyelitis (infantile paralysis) in monkeys, it is being used on an experimental basis in combating the Alabama-Tennessee epidemic.

Although the U. S. Public Health Service warns that this new development by two of its surgeons, Drs. Charles Armstrong and W. T. Harrison, "is not at present to be regarded as of proved value in the prevention of poliomyelitis in man," directions have been issued telling how the treatment may be administered.

If it is desired to use the solution it should be sprayed into the nostrils three or four times on alternate days, and thereafter weekly during the presence of poliomyelitis. The spray tip should be pointed upward and backward at an angle of about 45 degrees, and the spraying should be thorough enough to reach the pharynx as well, when a bitter taste will be noted. The early applications at least should be administered by a physician.

### Still Experimenting

The experimental work on animals is still being pursued. Therefore, the tentative procedure is subject to such changes as may be dictated by future findings.

The most effective solution so far developed during experimentation on monkeys is prepared as follows:

Solution A—Dissolve one gram (1 gm.) of picric acid in 100 cc. of physiological salt solution (0.85%). (Warming facilitates solution of the picric acid.) (*Turn to next page.*)

Solution B—Dissolve 1 gram (1 gm.) of sodium aluminum sulphate (sodium alum) in 100 cc. of physiological salt solution (0.85%). Any turbidity in this solution should be removed by filtering one or more times through the same filter paper.

Mix solutions A and B in equal amounts. The resulting mixture, which contains 0.5% picric acid and 0.5% alum, is sufficiently antiseptic to prevent the growth of organisms and is ready for use as a spray. Homemade concoctions are not favored.

*Science News Letter, July 25, 1936*

MEDICINE

## Short Syphilis Treatment Has Been Successful

THREE Chicago scientists believe that they have succeeded in decreasing materially the long period of treatment necessary for persons who have syphilis in its early stages. They further feel that their methods bring the eradication of the disease in its early stages one step nearer realization.

Dr. Clarence A. Neymann, Dr. Theodore K. Lawless and S. L. Osborne have merely combined the recognized fever and drug treatments of syphilis, and the results have been highly satisfactory. (*Journal, American Medical Association,* July 18.)

The average time consumed in this combined treatment is forty-two days. An average of five sessions of fever were given each patient and an average of five injections of neoarsphenamine were given during the treatment period. A small amount of bismuth salicylate was also used.

### Test Cases

Fourteen cases of early syphilis were treated with hyperpyrexia; that is, the patients were given a high fever. Half of them simultaneously were given arsphenamine and bismuth compounds.

The seven treated by fever therapy alone developed further signs of the disease. The seven given the combined treatment have shown no clinical signs of syphilis for periods ranging between five and eighteen months.

"This entire treatment presupposes an organized expert medical and nursing staff trained in giving hyperpyrexia treatments and the hospitalization of the patient during twenty-four hours for each session of hyperpyrexia," the three medical scientists state.

*Science News Letter, July 25, 1936*

METEOROLOGY-AGRICULTURE

# In Tennessee Valley Also Drought Did Great Damage

DROUGHT came early to the Tennessee valley—came early, and was broken early.

It was broken before dry weather elsewhere in the country began to get widespread attention. But the heavy rains that broke it did not repair damage already done by the most severe spring and early summer drought ever recorded at the Knoxville station of the U. S. Weather Bureau.

For 81 days, April 12 to July 1, only 2.69 inches of rain fell, and that came in scattered light showers. This was only one-quarter normal precipitation for the period. Though these observations were made in Knoxville itself, they are representative of the Tennessee valley as a whole.

University of Tennessee agricultural authorities estimate the damage for that state alone as between forty and fifty million dollars.

The hay crop was reduced sixty per cent. Farmers began to sell their dairy cattle because they had no feed for them, and in some cities the price of milk went up. Since the rain, forage crops such as millet, Sudan grass, soybeans, cowpeas and sorghum have been planted in an effort to make up the shortage.

### Too Late to Plant

Only sixty per cent of the usual tobacco acreage had been set before the rain, and now it is too late to plant more. Early garden and truck crops were cut from fifty to seventy-five per cent, and now late plantings are being made in the hope that farmers will have vegetables to can for winter use.

Corn and cotton have suffered least, but there had not been time to plant a full crop before the rain came. Some corn is now being planted for silage. Wheat, barley and rye were little affected. Spring oats were a failure.

If corn, cotton, tobacco and the newly planted crops are to be successful, there must be more rain. None has fallen since the drought-breaking precipitation at the very first of the month. As late summer and fall are normally seasons of lightest rainfall in this section, the outlook is not altogether bright.

Though the drought retarded the filling of Norris dam, enough water was stored so that some could be released to raise low water levels of the lower river. On June 19 the sluiceways were opened to maintain navigable depths below Chattanooga. Ninety-seven thousand acre-feet were discharged, and the lake level was reduced by more than four and one-half feet. The gates were closed again on July 3, following the heavy rains. By July 10 the losses had been more than made good.

Despite the fact that Norris Lake gates were not closed until March 4, the lake would have filled to the normal 1,020-foot level by July 20, had there been average rainfall, with no necessity for an emergency release of water. There were 1,436,900 acre-feet of water in the lake when the draw-down began. Total capacity at maximum flood level of 1,052 feet is 3,400,000 acre-feet.

*Science News Letter, July 25, 1936*

ARCHAEOLOGY

## Germans Build Museum For Prehistoric Art

GERMANY'S famous art galleries are to have a new addition—an exhibit of prehistoric art.

Wall pictures that the world's first artists painted in dim caverns or on cliffsides have been copied by expeditions led by Prof. Leo Frobenius, of Goethe University, Frankfurt am Main. To house the 3500 pictures, large and small, the German government is considering the construction of a special museum.

Evidence that there were two schools of art, even in the dawn of art history, is revealed by cave paintings in France and Spain. The eastern Spanish style was carried out in one color and depicted human beings as well as animal figures. The Franco-Cantabrian style, executed in polychrome, depicted animals exclusively. Both styles apparently flourished in the territory at the same time, Professor Frobenius concludes.

The fact that frescoes found in caves and on cliffs in Libya, North Africa, show resemblance to the Spanish style is regarded as evidence that Spain and North Africa made a territory of uniform artistic culture, 30,000 years ago.

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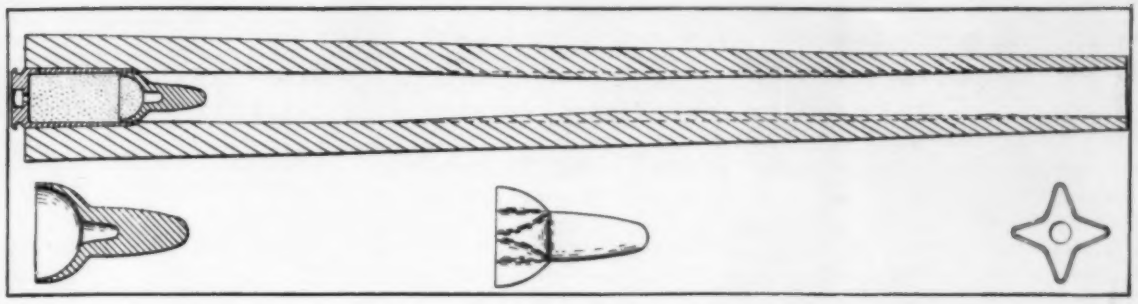

BALLISTICS

# New Fast Bullet is Shaped Like a Baby Bottle's Nipple

## Special Grooves in Gun Barrel Re-Form Cup Shaped Tail Into Fins to Stabilize the Missile's Flight

A NEW type of rifle bullet which is roughly similar in shape to the nipple on a baby's nursing bottle has been invented by Capt. Wiley T. Moore, Springfield Arsenal, it is revealed by a U. S. patent (No. 2,036,292).

Calculations indicate that because of its unusual shape the bullet should have about four times the acceleration of a normal .30 caliber projectile. Moreover, stabilizing fins are formed on the bullet during its passage down the rifle barrel so that it may be expected to fly straighter to its mark.

Captain Moore provides that the Federal government may use his invention without payment of royalty.

The body part of the new style bullet would correspond (to use the nursing nipple analogy) to the part of the nipple which the baby takes in its mouth. Integral with this is an enlarged hollow base part forming a cup-shaped tail whose diameter is about twice the size of the body part. The base would correspond to the part of the nipple which fits over the top of a nursing bottle.

The cup-shaped base is partly hollow and gives the exploding gases greater surface area on which to act. For equivalent gas pressures such an enlarged area means that there is more "kick" when the charge is fired; and that the bullet accelerates quicker and leaves the gun with a higher muzzle velocity.

As the bullet travels down the barrel of the rifle, special grooves act as a die to re-form the cup-shaped tail structure into fins. Much as the fins on a dirigible stabilize its flight in the air, so, envisions Captain Moore, the fins formed on the bullet will steady its flight toward the target.

Tests indicate that the friction losses due to spin produced in the rifle barrel are no greater with the new type bullet than with the ordinary shape. Only a quarter or half twist is given to Captain Moore's bullet, while the ordinary type turns more than one complete revolution during the time it is in the barrel.

Captain Moore's invention seeks a new solution for the problem which ballistics experts have been studying for a long time. What is really desired is a bullet "which would act like a cork while inside the gun and like a needle when in the air," as one expert once expressed it.

Bullets which have a muzzle velocity of between 5,000 and 6,000 feet a second have been made experimentally. In 1933 H. Gerlich, a German-American, then resident in England, developed a rifle giving a bullet such muzzle velocities. Gerlich's bullet was .35 caliber when placed in the rifle and, by compression during its course down the barrel, left the rifle at only .25 caliber.

In smallarms ballistics an equally ever-present problem is to retain sufficient velocity at long range to insure accuracy. Small-caliber bullets may travel swiftly enough to kill a man at a sizable distance, but their velocity may not be sufficient to keep them on their course to the target. If they strike they can kill, but they have to hit the mark before they can injure.

*Science News Letter, July 25, 1936*

### HIGHEST SPEEDS

The following are high speeds, man-made and in nature, contrasted with the new bullet speed. Figures are miles per hour.

| | |
|---|---|
| Boat | 84.07 |
| Auto | 301.473 |
| Seaplane | 423.822 |
| Sound | 720 |
| Earth | 1,110 |
| *New Bullet* | *3,600* |
| Comet | 20,520 |
| Light | 669,600,000 |

ARCHAEOLOGY

## Clay Figure May be Link To Mound-Builder History

A GAP between historic Indians and the vanished Moundbuilders may be closed by a clay figure in human form found in east central Louisiana. The hollow figure, decorated with animal patterns and a feathered robe, was found by Mrs. U. B. Evans of Alexandria, La., an enthusiastic student of local archaeology, and sent to Frank M. Setzler, curator of anthropology at the Smithsonian Institution. The image had been broken into several pieces, which however can be fitted together.

The Indians inhabiting this region when the Spaniards under de Soto first entered the land were of the Caddo tribe. The new-found effigy appears to be a link between a prehistoric Caddo culture and a Moundbuilder culture known as Southern Hopewell, discovered in the same region. This in turn links with other Moundbuilder cultures in the South and with the highly developed Northern Hopewell culture of the Ohio valley.

*Science News Letter, July 25, 1936*

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There were 19,000 houses of refuge for lepers in Europe in the thirteenth century.

ENTOMOLOGY

## Insects Can Hear Sounds Too Low for Human Ears

INSECTS can not only hear sounds too shrill for human ears to perceive, they can hear sounds too low-pitched for man to hear, as well. Certain kinds of crickets have a special hearing organ located at the rear end of the body, which is sensitive to very low-frequency vibrations, R. J. Pumphrey and A. F. Rawdon-Smith of Cambridge University have discovered. Locusts can hear super-shrill sounds by means of tiny bristles distributed all over them.

Messrs. Pumphrey and Rawdon-Smith did not depend merely on responses by the insects. They cut their heads off, connected the severed ends of nerves to highly sensitive amplifying hookups, and read responses to sound-stimuli as "kicks" of a pointer on a dial.

*Science News Letter, July 25, 1936*

MEDICINE

## Varicose Ulcers Treated Without Hospitalization

A NEW method of treating varicose ulcers which appears more satisfactory than any treatment hitherto suggested is described in the *Journal of the American Medical Association* (July 11).

Twenty-six persons have been treated by the new method for this chronic condition after from one to thirty-seven years of suffering during which time all recognized forms of treatment had been tried on one or more of them. All except three were healed after treatments extending over periods of from one to twelve weeks.

Dr. Leslie Saylor of Topeka, Kans., and Drs. Joseph Kovacs, A. Wilbur Duryee and Irving Wright of New York City make the report to the medical journal. Their experimental work was done at the vascular clinic of the New York Post-Graduate Medical School and Hospital of Columbia University, aided by a grant from the Josiah Macy, Jr., Foundation.

During the new treatment none of the patients were put to bed or sent to a hospital. They continued their daily occupations of washing, ironing, cooking, chopping wood and selling real estate.

In treating the varicose ulcers, the doctors saturate a reinforced asbestos paper with a 0.5 per cent solution of acetyl-beta-methyl-choline chloride and wrap it around the patient's foot and leg as high as the knee. A metal plate is placed over the wet asbestos paper and connected to the negative pole of a galvanic machine. The current is then turned on.

Half-hour treatments are given two or three times a week. The metal plates are never applied over the ulcerated area.

This form of treatment has especial value, the four physicians assert, in cases in which ulcers do not heal after the injection treatment for varicose veins or in cases in which injections are not to be recommended as, for example, with diabetes or phlebitis.

*Science News Letter, July 25, 1936*

ENTOMOLOGY

## Ticks Starve Three Years But Are Still Alive

THREE years since they ate, but adult ticks put into bottles with no food supply on April 10, 1933, are still alive and peppy.

Dr. F. C. Bishopp of the U. S. Department of Agriculture points to the bottled ticks as good evidence that ticks are hardy pests, not necessarily routed when the animals they feed on are destroyed or driven out of an area in one season. Wood ticks, or dog ticks, spread Rocky Mountain spotted fever, a disease widespread and with high mortality.

*Science News Letter, July 25, 1936*

CHEMISTRY

## Vacuum-Packed Milk Kept Fresh 42 Days

MILK kept fresh for six weeks, by a new method of vacuum packing, promises to revolutionize the dairy industry, if the technique is generally adopted.

The new method will be described in *Food Industries*, by Howard T. Greene, general manager of a large Wisconsin dairy firm that supplies the Milwaukee market.

The milk is put into ordinary milk bottles, but a tight metal cap with a gasket is used instead of the ordinary paper cap. Just before the cap is lowered into place and pressed home, live steam is introduced over the top of the milk. After the cap is sealed on, the steam is condensed, creating a partial vacuum.

Thus sealed, the milk will remain fresh for 48 hours at ordinary temperatures, or for six weeks if suitably refrigerated.

*Science News Letter, July 25, 1936*

## IN SCIE

METALLURGY

## Make Metallic Manganese By New Cheap Process

BRIGHT sheets of pure metallic manganese are produced from low grade ores by a new process of leaching and electrolysis developed by the U. S. Bureau of Mines. Success came in the hunt for a simple and cheap process when an ingenious method of maintaining constant acidity of the electrolyte used was discovered. Large manganese deposits in reach of Boulder Dam power will be made available by the new government research.

*Science News Letter, July 25, 1936*

SEISMOLOGY

## Chilean Quake Recorded At Eighteen Observatories

BUILDINGS and streets were demolished to the extent of $500,000 damage, though no lives were lost, in an earthquake that rocked four towns in the province of Antofagasta, Chile, on Monday morning, July 13. The shock was recorded at no less than eighteen seismological observatories in North America and throughout the Pacific area. Data transmitted by wire and radio through Science Service were interpreted by the Jesuit Seismological Association and the U. S. Coast and Geodetic Survey. The epicenter was in latitude 24 degrees north, longitude 70 degrees west. Time of origin was 6:12.3 a.m., eastern standard time.

Stations reporting were those of Manila Observatory, Manila, P.I.; Dominion Observatory, Ottawa; Dominion Meteorological Observatory, Victoria, B.C.; Seismological Laboratory, Pasadena, Calif.; University of California, Berkeley, Calif.; St. Louis University, St. Louis, Mo.; University of Michigan, Ann Arbor, Mich.; Georgetown University, Washington, D. C.; Pennsylvania State College, State College, Pa.; University of Montana, Bozeman, Mont.; University of Alaska, College, Alaska; and the observatories of the U. S. Coast and Geodetic Survey at Chicago, Ill., Tucson, Ariz., Ukiah, Calif., Sitka, Alaska, San Juan, P.R., and Honolulu, T.H.

*Science News Letter, July 25, 1936*

# EE FIELDS

ORNITHOLOGY

## Storks Ride Airplane, Germany to England

HORSES riding in transport trucks still look odd; but a recent job of transportation from Germany to England must have looked much odder, had people seen it. It consisted in a shipment of 19 young storks sent by airplane from Rossitten, Germany, to Croydon airport.

The storks are intended for a scientific study of migration flight, when they are ready to go south next autumn. Five of the birds have been taken to Kent, the remainder to Scotland. When migration time comes, close observations will be made, to see what track they take toward winter quarters. Will they fly off in a bee-line, or will they insist on going back to their hatching place first, and then following the way of their ancestors?

Ornithologists do not know, so their watch will be all the keener.

*Science News Letter, July 25, 1936*

PHILOSOPHY

## "Anaximandering," Coined From Name of Geographer

ANAXIMANDER was a Greek geographer, the first to draw a map of the known world. His purpose was to show the relations of the parts, to see what the thing looked like when put together.

The same sort of thing applied to knowledge in general, and to the order of life which may be put together out of the seemingly separate parts of knowledge, might well be called "Anaximandering," suggests a present-day geographer, President Isaiah Bowman of the Johns Hopkins University, in the title-chapter of a new book of essay-addresses on education, *A Design for Scholarship* (Johns Hopkins Press). "It is the opposite of meandering, that hither-and-yon-ness that is the natural law of streams rather than of men."

Design—a definite idea of the goal and of how to get there—is fundamental to education, as its lack is fatal, whether through mental laziness or supine yielding to passing fads and fashions. This does not imply rigidity in the design or obstinacy in following a planned course when it is seen to be failing of the goal. Indeed, true design for scholarships can neither be conceived nor its realization attempted in a regimented society, Dr. Bowman holds.

"If you wish the world to remain static," he says, "do not foster learning and the application of reason to human affairs. If you wish to substitute propaganda for research or put prejudice before learning, do as is done today in two countries once world-famed for learning —imprison the scholar or hound him into exile."

And just because we may have slain one bugaboo of prejudice, we have not thereby earned the right to sit back smugly and think that the many-headed monster is finally disposed of, Dr. Bowman warns. "The Dayton fundamentalists have become a national jibe, but can we examine dispassionately either the pros or the cons of American adherence to the League of Nations, to mention but a lesser challenged item among the many that now provoke school boards to wrath? Evolution no longer troubles a distracted world: the patrioteers have transferred their earnestness to the oath of allegiance."

Yet Dr. Bowman would not claim for the schools the exclusive privilege of leading the way in a changing social order. He vigorously disclaims, on the part of teachers any "special power, all-embracing and conclusive, to 'settle' the affairs of men." In his opinion, freedom of learning is at least as important as freedom of teaching. Students, he feels, are competent to listen to what the professors have to say—and to reject nonsense coming from the Chair as they would nonsense coming from any other quarter.

*Science News Letter, July 25, 1936*

ARCHAEOLOGY

## Weatherproof Ancient Ruins With Chemicals

AFTER years of research, scientists believe they have found a weather-proofing compound to save prehistoric pueblo ruins in the Southwest from further damage by weather and erosion.

Field experiments in the past year, by Frederick T. Martius of the National Park Service, have tested a newly developed compound, consisting in part of a solution of vinyl resin in acetone and toluene. The material appears to meet the numerous requirements.

*Science News Letter, July 25, 1936*

EDUCATION

## Character Ideals Changing Since Horse and Buggy Era

BEN FRANKLIN'S famous list of virtues might not make him a pillar of society at all in this fast-moving twentieth century. So the American Home Economics Association was told, at its meeting in Seattle.

What was considered a vital character in horse-and-buggy days, or earlier, may be quite morally inadequate in this streamlined age, declared Dr. E. W. Warrington, of Oregon State College, discussing the homemaker's part in character education.

The child of today must be prepared to live in a civilization that is in a state of flux, the speaker emphasized, and "the indications are that speed will increase, rather than diminish."

Up-to-date character traits for vital living and comments by Dr. Warrington include:

### Modern Traits

1. Discrimination. Essential in facing issues today. If we live vitally, we must distinguish among the good, the better, the best.

2. Self-discipline. Leads to vision, power, freedom, and poise of personality.

3. Appreciation. To live vitally, whether poor or rich, one needs ability to discover beauty and goodness in the world around.

4. Imagination. The errand boy which may be trained to try out issues for us and give the verdict before we ourselves become involved. Important in the uncertainties of the present world.

5. Humor. Ability to recognize the inconsistencies, the ridiculous, the odd in one's own actions and those of others, with a twinkle in the eye, is rather essential for healthy living, especially so in this age.

6. Reverence. There is need to discover the overtones and certainties among the transient features which challenge worship.

7. Joy. There seems to be a close relationship between joy and energy, joy and progress, joy and righteousness.

The virtues that Ben Franklin set down for himself in the eighteenth century and that modern character education doubts would give results in this streamlined age are: Temperance, silence, order, resolution, frugality, industry, sincerity, justice, moderation, cleanliness, tranquillity, chastity, humility.

*Science News Letter, July 25, 1936*

ASTRONOMY

# The Comet Still Shines

## Astronomers Have Great Interest in Tracing Path Of Peltier's Find Across the Summer Skies

By JAMES STOKLEY

TO THE ancient astronomers, seeking to find a reasonable explanation for the phenomena they observed above, the motions of some of the heavenly bodies were particularly puzzling. This month we can appreciate some of their difficulties when we watch both Peltier's comet and Jupiter. A few months ago the comet was far out in space, a "shovelful of gravel thrown through the air," a swarm of relatively small particles, but with wide spaces between them. As it came nearer the sun, it became brighter, as comets always do, partly because of the greater intensity of the illumination, but mostly because the sun's rays caused the material to give off gases which it contained. These gases in turn were excited to luminescence.

### Found in May

In May, Leslie Peltier, the Ohio amateur astronomer, discovered it, thus getting his name attached. Then it came even closer to the sun, and still brightened. On July 8 it was about ten million miles farther from the sun than the earth and was then of greatest brightness. But it was still about two-thirds as far from the earth as the sun's distance, 93,000,000 miles.

It is still getting nearer to us, and while its intrinsic brightness is diminishing, its apparent brilliance is increasing. On August 4 it will be closest the earth, only 15,800,000 miles distant. Shortly before this approach it will appear most brilliant, about the magnitude of the faintest stars in the Great Dipper. Then it will recede again into outer space, and in a few months will be lost even to powerful telescopes.

As it passes closest to the earth, its motion through the sky will be most rapid. During the eight days from July 3 to 11, for instance, it was in the constellations of Cepheus and Cassiopeia, and moved only a little more than three degrees, or about six times the apparent diameter of the moon. But during the same period of time from July 27 to August 4, it will move from Lacerta, the lizard, a little group near Cygnus, into Aquarius, a distance of about 47 degrees. The next eight days will take it more than fifty degrees farther south. On August 12 it will be in Indus, the Indian, a star group so far to the south that it is never visible from most of the United States. Then its motion across the sky will slow once more. From the 20th to the 28th it will move only seven degrees, through the constellation of Pavo, the peacock.

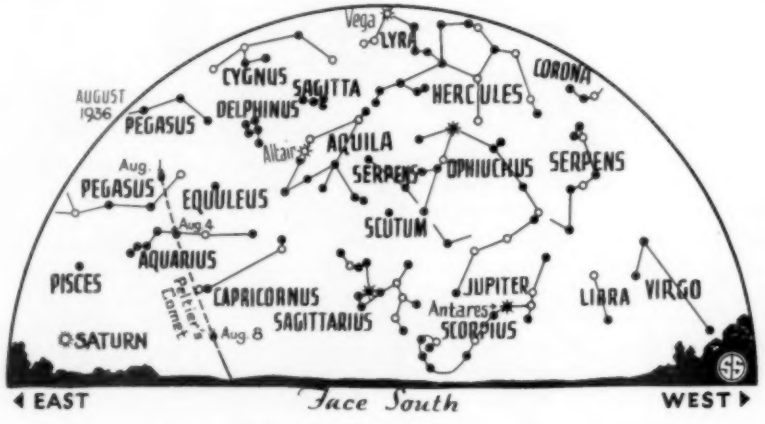
### Same Effect With Train

Whenever you watch an express train pass on a nearby track, or a speeding automobile on a long straight road, you see an exactly similar effect. Five miles away, three miles, two miles, one, a half, a quarter, the train still is in almost the same direction, and the head need not be turned to follow it. But now it is a thousand feet away, a hundred, and the head turns sharply. Now it is half a mile down the track, and the head is again almost still. Since it was nearest the sun the comet's speed has actually been slowly decreasing, but when it passes nearest to us, its direction from us changes most rapidly, and it seems to be moving fastest.

Another celestial motion, much slower in producing a change in direction, can be seen in the case of Jupiter. During the year the sun apparently moves around among the stars from west to east. Actually the earth is going around the sun, once every year, and during different months, when we are in different directions from it, we see it against a different starry background. The planets also, in general, move around the sky from west to east, and in the case of Jupiter for example, we see it farther east now than we did the year before. But if you have been watching it carefully during the last few months, you will have seen it moving to the west, nearer and nearer to Antares. About August 11 it will seem not to move at all among the stars. By the end of the month it will be moving eastward.

### Observed Motion Composite

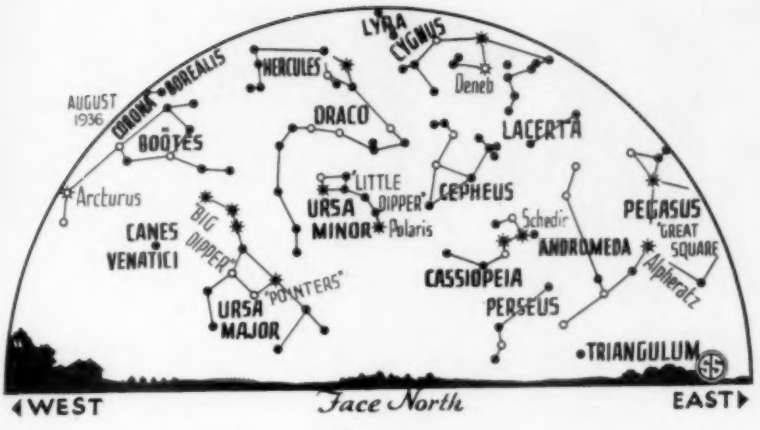
This is due to the fact that the motions we observe in the sky are composites of the motion of the particular body with that of the earth itself. The nearer a planet is to the sun, the faster it moves in its orbit. At our distance of 93,000,000 miles we travel at a speed of more than 18 miles a second, while Jupiter, 483,200,000 miles out, covers only eight miles a second. Once every year we dash around on the same side of the sun as Jupiter, and overtake it, as an express might overtake a freight train on a parallel track. And just as the freight train, to a passenger on the express, may seem to be moving back-




☼ ✸ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

*COMET'S PATH*

***With the aid of this map, you may follow the path of the heavenly visitor through the August skies.***




*NORTHERN STARS ARE FAMILIAR*

wards, so does Jupiter seem to travel backwards, or "retrograde," when we are going by. Then, when we begin to move away from that planet, there is a position where it seems to stand still, and then to move in its actual direction.

It is easy to explain today, but the Greek philosophers invented an elaborate system of cycles and epicycles, circles whose centers moved in other circles, whose centers moved in other circles, and so on until, as Sir Arthur Eddington has said, "the music of the spheres was lost in the whir of machinery." But this all became unnecessary when, in 1543, the Polish astronomer Nicolaus Copernicus revived the suggestion of the Greek Aristarchus that the earth is but one planet, revolving with the others around the sun.

### Jupiter Still Brightest

During August the planet Jupiter is still the brightest object in the evening skies, shining in the southwest in the constellation of the Scorpion. Nearby, to the right, is red Antares, the brightest star in that group, though greatly inferior to the planet. Directly overhead is the most brilliant star of the summer evening. This is Vega, in Lyra, the lyre. Next, to the east, is Cygnus, the swan, often called the Northern Cross. The bottom of the cross points a little to the west of south, at the top is the first magnitude star Deneb. This name is from an Arabic word meaning "tail" and it marks the tail of the swan. The bird's wings are formed by the arms of the cross, while the foot indicates his long neck, stretched ahead as he flies through the sky.

To the south of Cygnus is another bird, the eagle, Aquila, in which appears the star Altair. Still farther south, left of Jupiter, is Sagittarius, the archer, a figure resembling a tea-pot, the spout to the right, the handle to the left, and the lid (as it should be) above. The stars of the handle and the lid also make up a little dipper, sometimes called the Milk Dipper, to distinguish it from the Great and Little ones, in the northern sky.

The Great Dipper, best known of all the star groups, is in the northwest, the handle pointing up and to the left. Actually, this is part of Ursa Major, the great bear. As most people know, the stars of the bowl of the dipper opposite the handle are the pointers. Follow their direction up and to the right, and you soon come to the pole star, Polaris, which stands close to the north celestial pole, the point of the sky over the earth's north pole, and the one around which all the stars seem to revolve once a day, because of the earth's rotation on its axis. Polaris is at the end of the handle of the Little Dipper, which in turn is part of the little bear, Ursa Minor. Winding his snaky lengths between the two dippers is Draco, the dragon, his head a diamond of stars northwest of Vega.

### Bear Driver

Directly west at the times for which these maps are drawn (10:00 p.m. standard time on Aug. 1, 9:00 p.m. on the 15th and 8:00 p.m. on the 31st) is Arcturus, in Bootes. This group is also called the bear-driver, as it represents the figure of a man with two dogs on a leash, driving the bears onward in their constant circuit of the sky. Next above Bootes is a semi-circle of stars, Corona Borealis, the northern crown, a delicate little group that the Indians said was a council of chiefs around a campfire. Between Corona and Lyra is Hercules, the great hero of mythology, who is represented as kneeling on the dragon. According to ancient lore, this beast represents the one that stood watch over the gardens of the Hesperides, which Hercules killed in his eleventh labor, in order that he might secure the golden apples that grew there. Six of the brightest stars in Hercules form the figure of a butterfly, its body east and west, one wing to the south, the other to the north.

### Another Giant

South of Hercules is Ophiuchus, another giant, who is holding a great serpent, and standing upon the scorpion. Sometimes he is identified with Aesculapius, the famous physician of antiquity. The snake, perhaps because of its wisdom, has long been associated with the medical profession. This is shown even today by the collar device worn by army doctors—the caduceus, the winged staff with its two intertwined serpents.

In the eastern sky another planet can be seen quite low. This is Saturn, as bright as a first magnitude star. Higher and farther north, is the great square, resting on one corner. The star at the right corner is in Andromeda, and the other three are in Pegasus, the winged horse, a group just below Cygnus. In the northeast is Cassiopeia, the queen, the stars forming a letter W. Her royal spouse, the King Cepheus, is directly above.

### "Whose Dust Is Gold"

To a person away from the city's glare, August evenings afford a good opportunity to see the Milky Way, Milton's "broad and ample road whose dust is gold and pavement stars." Extending from Cassiopeia through Cepheus, Cygnus and Aquila to Sagittarius, this consists of the combined light of countless millions of stars, each so distant, and therefore so faint, as to be imperceptible to the unaided eye. But so great are their numbers that their light combines to give the effect that we see.

During the first part of August, the eastern sky will have a special attraction —Peltier's comet, the first since 1910, year of Halley's comet, to become easily visible without telescopic aid. The dotted line on the map shows its path through Pegasus, Aquarius and Capricornus in the first ten days of the month, after which it passes out of view to northern observers. The comet will be of about the fourth magnitude.

*MODERN GOD*

***A modern touch to ancient worship is provided by this strange figure worshiped by the Indians of Panama. The spirits of heroes of both aviation and medicine are combined in this gaily painted airplane manned, on the wings, by two human figures bearing the unmistakable likeness of Dr. William Patterson, Scottish physician deified by these Indians years ago.***

PSYCHOLOGY

# Self-Preservation is Aim of Suicides Among Primitive Men

SUICIDE as a means of self-preservation sounds like a paradox. Yet self-preservation is the drive behind suicide in the case of primitive man and even, perhaps, of civilized man when mentally sick, Dr. Gregory Zilboorg of New York City points out. (*American Journal of Psychiatry*, May.) Dr. Zilboorg is chairman of the new Committee for the Study of Suicide, Inc.

Actually, suicide appears as a perversion of the instinct for self-preservation, Dr. Zilboorg explains. Primitive man, wanting above all to preserve himself, and having the idea that by dying he entered eternal life, killed himself in order to live forever.

"This is quite obviously a non-realistic and purely infantile way of achieving a seemingly adult goal—a fact justifying the use of the term perversion," Dr. Zilboorg says. "We can see now why it is that the suicidal drive appears to be endowed with such an elemental force; it has such a force because it springs from the most vital drive man possesses, the instinct of self-preservation. It is this instinct shifted into the psychological field that drives the human ego to the assertion of immortality, and thus to fantasied preservation of the ego through death.

"One might even say that what man today attempts to achieve by means of books, monuments and works of art was achieved by primitive man largely through suicide.

"Here and there within the frame of our civilization this old method of self-assertion revives and re-enacts itself with the result that the individual destroys himself. Although this is demonstrated more obviously in psychopathological material, it is not necessarily pathological. In conclusion let us recall the almost universal idealization of the act of suicide among primitive races, and in the light of our hypothesis we will see that this idealization is in fact but another method of re-stating and re-asserting one's own immortality."

This theory covers only one side of the problem of suicide, Dr. Zilboorg says, but it indicates, he believes, that the solution of the psychological and biological nature of suicide is to be found by ethnological study.

*Science News Letter, July 25, 1936*

ETHNOLOGY

# Indians of Panama Now Worship an Airplane God

CHOCO Indians in Panama are making a god of the airplane. And a curious god it is, suggesting to those who know a little of aviation and a little of ethnology that these Indians have blended the spirit of Lindbergh and the spirit of their old Scottish patron saint, Dr. William Patterson.

Evidence of this new deity has reached the Smithsonian Institution at Washington. It consists of a plane skillfully carved out of the very lightweight balsa wood, and gaily painted in blue, even to insignia. These Indians know airplanes. They even provided a whirling propeller for the airplane image, it appears from the mark where a propeller seems to have once been attached.

Balancing lightly on the wings are two small human figures crudely cut, but each wearing the unmistakable hooked nose of Dr. William Patterson. Thus the Choco Indians retain their loyalty to a Scotsman whom they deified 200 years ago.

Dr. Patterson was a member of a Scottish colony in Panama in the seventeenth century. He was kind to the Tule Indians, helping medicine men to treat their patients, and when he died Indians of the region began to think of Dr. Patterson as a god who had once lived and worked wonders among them.

Carved images of the long-nosed doctor, wearing his Scottish cap and his walking suit and carrying his crooked stick, adorn the canes used by Indian medicine men in their rites of curing the sick. So widespread is the cult of the old doctor that Indians in South America revere his image.

Ethnologists explain that among Indians of the region it is customary for a medicine man to keep an assortment of statues of gods, representing animals, forces of nature, deified individuals—and now, the airplane. The gods help the medicine man to cure a disease, or

to prescribe for whatever emergency harasses a patient.

The Indian medicine man holds the airplane image in his hand and consults it, pretending to receive advice from it.

How widely the airplane god has spread among Choco and other Indians of Panama is not yet known. The wooden airplane is one of five assorted religious images collected in the region by Capt. K. S. Anderson of the U. S. Army, and received by the Smithsonian.

It is not known, either, whether the airplane god is believed to have some specialized power over nature, as such gods often supposedly have. Perhaps the thought is that Dr. Patterson—or rather two Dr. Pattersons—now come more swiftly by air to the aid of the sick.

*Science News Letter, July 25, 1936*

GEOLOGY

# The "Bays" of Carolina May Have Been Formed by Water

THE world's greatest area of supposed explosion craters, making the battlefields of Flanders seem like miniature models, may not have been due to explosions after all. They may have been formed by the far less spectacular action of water, dissolving underground beds of stone.

Such is the hypothesis of the origin of the famous Carolina "bays" advanced in *Science* (July 3), by Prof. Douglas Johnson, Columbia University geologist.

The "bays" of the Carolina coastal plain are not arms of the ocean, and probably never were. They are great oval depressions, each rimmed with a sand ridge that is highest on the southeastern side, and usually filled with timber growth. Although there are very many of them—hundreds of thousands in all, Prof. Johnson says—practically all have their longest diameter oriented in the same direction, from northwest to southeast.

Their peculiar and uniform shape, as well as this prevailing orientation, some time ago led Profs. F. A. Melton and William Schriever of the University of Oklahoma to offer the theory that they had been caused by the fall of an enormous shower of meteorites, possibly the fragmented head of a comet, during or before the Pleistocene ice age. Single meteorite falls are known to have great explosive effects, scooping out elliptical pits with raised rims. The Oklahoma geologists boldly extended this principle to a wholesale application on the South Atlantic coastal plain, and thereby started a very lively scientific discussion.

Prof. Johnson points out several objections to this theory. The rims of the "bays," he says, are not composed of material thrown out of the bottom, but of clean, fairly coarse sand, such as might be blown up off a lake beach. Furthermore, he states, geological evidence indicates that the force that formed the "bays" acted in one direction, while the force that formed the rims acted in another. Despite the prevailing northwest-southeast orientation of the depressions, some of them are practically straight north-south, and there are a few at least that lie northeast-southwest. This would be practically impossible if they had been caused by a shower of rock or iron fragments all flying in the same direction.

Furthermore, Prof. Johnson continues, the area is underlain with thick beds of limestone; on which underground water acts to form caverns that in turn cave in and form sinks of various sizes. Bottom deposits in the "bays," and their association with these geological cave-ins, have persuaded him that they probably started as lakes in sink-hole basins, that subsequently drained, leaving their old sand beach-ridges where the prevailing winds had piled them.

*Science News Letter, July 25, 1936*

MEDICINE

# Disease Transformed Into Another for First Time

FOR the first time in the history of medicine one disease has been transformed into another, an achievement that promises to be of wide significance to all biological science.

Dr. George Packer Berry of the University of Rochester School of Medicine reported to the American Association for the Advancement of Science, meeting in Rochester, N. Y., the production of a malignant 100 per cent killing tumor disease in rabbits by injecting into them a virus of a non-fatal skin disease to which had been added some completely heat-killed virus of the deadly disease.

No disease, whether caused by bacteria or filterable viruses (thought to be organisms too small to be seen with a microscope), had heretofore been changed into another. This discovery has important bearing upon questions of how diseases originate and why and how new diseases or strains of infection come into existence.

Out of Dr. Berry's discovery may come an explanation of why and how vaccination protects against smallpox, for instance. Also it is possible, said the Rochester scientist, for more than one kind of virus to infect a single cell of the body, a discovery that promises to be of importance in the study of cancer.

Rabbits have two diseases, one called myxoma which is malignant and very infectious. From this the bunnies never recover. The other, called rabbit fibroma, is nasty appearing but the rabbits never die from it. The diseases look somewhat alike. Both are caused by tremendously small unseen organ-

isms that are called "filterable viruses." A curious fact was recently discovered. Rabbits that have recovered from an attack of fibroma can not be made to catch the deadly myxoma, just as cowpox vaccinates against smallpox.

But when Dr. Berry and his assistants tried the experiment of killing with heat some myxoma virus, mixing it with active fibroma virus and injecting it into rabbits, the animals fell ill and died of myxoma, not fibroma. The harmless disease had been converted into the deadly one, despite the fact, as control experiments showed, that the dead myxoma virus alone had no effect. Not once but thirty times was the experiment performed and scientists at the Rockefeller Institute for Medical Research have repeated and confirmed the discovery.

With one virus disease that can be made to evolve into another one, scientists may be expected to turn their attention to other virus diseases, some of which like infantile paralysis and encephalitis are human killers.

*Science News Letter, July 25, 1936*

FISHERIES

# Oysters Shuck Easily After Vinegar Anesthetizes Them

TIGHT-MOUTHED oysters can now be made to open up automatically by a novel method of putting them under "ether," which is described in a patent (No. 2,041,727) granted to H. F. Prytherch and Vera Koehring, U. S. Bureau of Fisheries workers, of Beaufort, N. C.

Before being put under the anesthetic, the oysters are given a "shock" treatment. This may be a good shaking up, an electrical shock, dropping them on a hard floor, or spinning them around in a centrifuge. Stupefied by such rough handling, the stunned oysters are then put into the "anesthetizing" solution which may be nothing more than water containing a small amount of acetic acid, well-known ingredient present in ordinary vinegar. Real ether, chloroform, alcohol, and salts of many kinds, may be also used for the purpose, however. Ten minutes to a half-hour in such a bath is sufficient to cause the oyster to open up automatically.

### No Prying

There is no breaking, puncturing or prying open of the shell with knives as in the usual method of shucking oysters. The inventors solve the problem by making the oyster relax the powerful muscles which keep the shells closed and make it so hard to shuck oysters in the usual way. Shock and bathing in the anesthetizing bath are the muscle relaxers.

When the muscles relax, the shell opens. It is held open by the hinge cushion, which, like a spring wedge, exerts considerable pressure on the shells, forcing them apart.

While open, the meat can be removed from the oyster. Or where the oysters are used in pearl culture, "seeds" can be planted in them and the oysters replaced in the sea water.

*Science News Letter, July 25, 1936*



SEISMOLOGY

## Quake Center Located Near Walla Walla

SCIENCE placed a finger on the center of disturbance of the Washington-Oregon earthquake shortly after it happened. It was in a spot some ten or fifteen miles northwest of Walla Walla, Wash., in latitude (approximately) 46.2 degrees north, longitude 118.2 degrees west. This location was worked out by scientists of the U. S. Coast and Geodetic Survey.

Stations wiring data to Science Service were: St. Louis University, Fordham University, University of California, University of Montana, Pasadena Observatory, the Coast Survey observatory at Sitka, and the Dominion Meteorological Observatory, Victoria, B.C.

*Science News Letter, July 25, 1936*

METEOROLOGY

## "Robot" Weather Apparatus On Balloons Proves Worth

"ROBOT" weather instruments, carried high aloft on small unmanned balloons, proved their worth during the Seventh Annual National Soaring Contest. Each one automatically reported by radio the altitude of the balloon, relative humidity and temperature every minute throughout its flight into the upper atmosphere.

The information secured in this way has been added to the periodic meteorological data collected for the use of soaring pilots in their annual assault upon world and national records in motorless flight. The radiometeograph ascensions have been conducted by representatives of the Blue Hill Observatory, Harvard University, Milton, Mass., under the direction of Dr. K. O. Lange, who has pioneered in the development of this new type of medium for collecting meteorological data.

### Great Altitudes Reached

The first ascension during the soaring contest was made from Harris Hill on June 27. The twin balloons needed to carry the tiny apparatus rose to an altitude of 68,000 feet and signals were heard for 64 minutes from the take-off time, 4:10 in the afternoon. During the second ascension, made on the following day, the balloons carrying the instruments reached an altitude of about 80,000 feet and the signals were heard for 1 hour, 58 minutes.

The balloons reached an altitude of about 100,000 feet on June 29, the signals being heard from 12:14 p.m. to 2:57 p.m.

A specially interesting ascension was made on June 29. The balloons were released after dark in the evening and were followed to 13,200 feet. At that point the signals began to record a descent. They were followed to a point where the temperature was lower than at the take-off site, indicating that the apparatus had landed. The failure of the balloons to go higher in this flight probably was due to the bursting of one of the balloons.

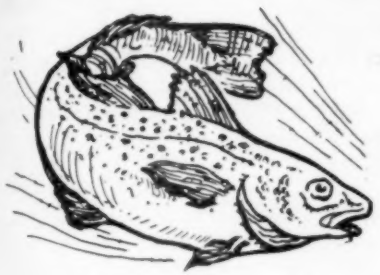
Beginning in 1932, the soaring contests conducted by the Soaring Society of America have had the advantage of the most advanced meteorological service available. The soaring pilots were among the first in this country to be taught to use the air mass system of weather forecasting and interpretation.

*Science News Letter, July 25, 1936*

PHYSIOLOGY

# NATURE RAMBLINGS

*by Frank Thone*



## Fish Must Have Air

FISH cannot live without air.

Well, not exactly air, perhaps; but fish must have the same air-element that we ourselves must have, or perish. Oxygen is as necessary to them as it is to us, and for the same reason: to be carried to all the living cells by the red blood corpuscles, and there to burn up the fuel-foods that keep the life-fires going.

We get our oxygen from the air we take into our lungs. It is the only chemical element we extract from the mixture we call air. The rest—nitrogen, carbon dioxide, and the rare gases argon, krypton, neon and xenon—play much the same role in our breathing that "roughage" does in our eating. They just dilute the oxygen, which in the pure state might be a bit too concentrated.

For the fishes, oxygen is dissolved in the water, instead of being mixed with a lot of other gases in the air. The endless water-gulping of fishes is simply their means of keeping a steady stream of water flowing over their lungs, so that they may extract the necessary oxygen from it. The old simile, "drinking like a fish," is therefore a libel on the fish.

If there is no dissolved oxygen in the water the fish cannot live. The principal reason why there are no fish in excessively polluted rivers is not that the fish object to the filth (though many of them do), but that the innumerable bacteria and other lower life-forms take out so much of the dissolved oxygen that the fish never get a chance at it.

You get the same sort of thing on a small scale if you don't change the water in your goldfish-bowl often enough. The fish use up a considerable part of the dissolved oxygen themselves, and the micro-organisms multiply, using up the rest. So your fish get into distress. The situation may be considerably aggravated if you let your goldfish-bowl stand in a window or other warm place, for warm water will hold less oxygen in solution than cold.

Some fish can live for considerable periods out of water, but they are not getting much benefit from the air—if any at all. Fish gills are not adapted for getting oxygen out of air, any more than lungs are adapted for getting oxygen out of water. When a catfish lives for a half-hour lying on the bank in the sun, it is simply a phenomenal case of "holding his breath."

There are also fish that deliberately leave the water and migrate for considerable distances overland. Such fish usually have tight-closing pockets over their gills, that retain a small supply of water, and so prevent them from drying out. They also get along by "holding their breath," just as a good diver can work or do stunts under water for several minutes before he has to come up and breathe.

There are, of course, fish that do breathe air—the famous though now rather rare lungfishes of the tropics. They have real, though rather simply constructed lungs.

*Science News Letter, July 25, 1936*

# •First Glances at New Books

**Applied Science**

ELEMENTARY SCIENCE APPLIED TO THE FIREFIGHTING SERVICE—W. Fred Heisler—*Oklahoma A. and M. College,* 166 p., $1. There is a great deal more to firefighting than just squirting water from a hose. The fires that firemen fight (and even more important, those that they prevent) are high-pressure problems in physics and chemistry, which exact a terrible penalty if you "flunk"; contrariwise, which can be solved the more quickly and effectively if you understand the principles on which they operate. That is what this book is about.

*Science News Letter, July 25, 1936*

**Education**

A DESIGN FOR SCHOLARSHIP—Isaiah Bowman—*Johns Hopkins Press,* 185 p., $1.75. A collection of addresses by the president of the Johns Hopkins University. They read as vigorous as they sounded from the platform. (See page 57.)

*Science News Letter, July 25, 1936*

**Physics**

LE DEUXIÈME THÉORÈME DE LA THERMODYNAMIQUE ET LA MÉCANIQUE ONDULATOIRE—Satosi Watanabe—*Hermann & Cie, Paris,* 93 p., 20fr.

*Science News Letter, July 25, 1936*

**Physics**

THÉORIE DU DIFFUSEUR—F. Bedeau—*Hermann & Cie, Paris,* 67 p., 15fr.

*Science News Letter, July 25, 1936*

**Physics**

CHALEUR SPÉCIFIQUE ET THÉORIE DES QUANTA—Chr. Musceleanu—*Hermann & Cie, Paris,* Part I, 49 p., 15fr., Part II, 33 p., 12fr.

*Science News Letter, July 25, 1936*

**Physics**

MAGNÉTISME ET ÉLECTRICITÉ TERRESTRES—Ch. Maurain—*Hermann & Cie, Paris,* 63 p., 15fr.

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**Hygiene**

SEX AND THE LOVE IMPULSE—J. H. Burns—*Macmillan,* 61 p., 50c.

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**Geology**

CONTRIBUTIONS TO GRAND CANYON GEOLOGY — Various Authors — *Grand Canyon Nat. Hist. Assn.,* 26 p., 15c. Three short papers, one on the Tonto Group, the other two mineralogical. Intended for students, rather than the general touring public.

*Science News Letter, July 25, 1936*

**Health**

SOME ASPECTS OF CHILD HYGIENE—Mary G. Cardwell—*Pitman Publishing Corp.,* 82 p., $1. This book for teachers is designed to give them a background for observing departures from normal in the health of children. The author's opinion is that teachers are the first line of defense in the fight against incipient or actual ill health. The book should prove helpful to teachers and indirectly to their pupils.

*Science News Letter, July 25, 1936*

**Ornithology**

THE RESIDENT BIRDS OF SOUTHERN MICHIGAN—W. H. Burt—*Cranbrook Inst. of Science, Bloomfield Hills, Mich.,* 43 p., 50c. (Order direct from publishers.) Brief popular accounts of the year-round birds of southern Michigan, with spirited illustrations by George M. Sutton.

*Science News Letter, July 25, 1936*

**Optometry**

VISUAL FIELDS—T. A. Brombach—*Tuttle Pub. Co.,* 228 p., $10.

*Science News Letter, July 25, 1936*

**Pharmacology**

THE THERAPEUTIC AGENTS OF THE PYRROLE AND PYRIDINE GROUP—W. F. Von Oettingen—*Edwards Bros.,* 258 p., $4.75.

*Science News Letter, July 25, 1936*

**Biology**

NEUROEMBRYOLOGY — Samuel R. Detwiler—*Macmillan,* 218 p., $3.75.

*Science News Letter, July 25, 1936*

**Botany**

WILDFLOWERS OF SOUTHERN CALIFORNIA—Carl Thurston—*Esto Publishing Co.,* 412 p., $4.25. A popular floral "key," with many pages of half-tone illustrations of critical points, which should aid both student and amateur greatly in making sure he has worked out the right identification.

*Science News Letter, July 25, 1936*

**National Parks**

HIGH TRAILS OF GLACIER NATIONAL PARK — Margaret Thompson — *Caxton Printers,* 167 p., $3. A book for visitors to the northernmost of the National Parks of the United States proper: scenery, Indians, geology, animals, wildflowers, all pass in easy-going review, with 17 full-page illustrations that alone would be worth the price of the whole volume.

*Science News Letter, July 25, 1936*

**Ethnology**

THE AUTOBIOGRAPHY OF A PAPAGO WOMAN—Ruth Underhill—*American Anthropological Association,* 64 p., 75c. Miss Underhill has recorded and arranged the memories of an Indian woman ninety years old whose story of her life was "her constant preoccupation."

*Science News Letter, July 25, 1936*

**Marine Biology**

THE HABITAT AND FOOD OF THE CALIFORNIA SEA MUSSEL—Denis L. Fox—*University of California Press,* 64 p., 75c.

*Science News Letter, July 25, 1936*

**Magneto—Optics**

BIRÉFRINGENCE MAGNÉTIQUE DE L'OXYGÈNE LIQUIDE, DE L'AZOTE LIQUIDE ET DE LEURS MÉLANGES—P. Lainé—*Hermann & Cie, Paris,* 55 p., 15fr.

*Science News Letter, July 25, 1936*

**Hygiene**

GUARDING OUR HEALTH—Nils W. Olsson—*Globe Book Co.,* 155 p., $1. Short, simple text for elementary course in hygiene.

*Science News Letter, July 25, 1936*

**Physiology**

AN ELEMENTARY MANUAL OF PHYSIOLOGY—Russell Burton-Opitz—*Saunders,* 442 p., $2.50.

*Science News Letter, July 25, 1936*

**Education**

STUDYING EFFICIENTLY—S. L. Crawley—*Prentice-Hall,* 95 p., 65c. A useful handbook for college and other students.

*Science News Letter, July 25, 1936*